

Ijtihed Kilani

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EDUCATION

Aalto University

GPA: 4.3, June 2026

Bachelor of Science (Honors) in Computational Engineering, Minor in Computer Science

Espoo, FI

Relevant Coursework: Data Structures and Algorithms, Computer Architecture, Databases, SWE, ML

Y Combinator

2025

Selected as 1/2,000 attendees for YC's first-ever AI Startup School

San Fransisco Bay Area, US

SKILLS AND TECH STACKS

Programming Languages: Python, C#, JavaScript, TypeScript

Frameworks and Libraries: Flask, Unity, Three.js, Cannon-es, OpenCV, TensorFlow, Bootstrap, Tailwind CSS

Concepts: Multiplayer Backend Architecture, Scalable Systems, CI/CD Pipelines, DevOps Practices, API Design, CRUD Operations, Dockerized Services, Infra Engineering, Agile Methodologies, Machine Learning, Software Engineering

Tools and Platforms: Git, Docker, Redis, Supabase, PocketBase, Vercel, Unity Editor, PhysX, MapLibre, WebSockets

EXPERIENCE

Software Engineer — Simulation Systems & Backend

March 2025 – Present

Sensofusion

Helsinki, Finland

- Architected a full-stack real-time drone-defence simulator (**TS + Webpack 5** front-end, **Python asyncio** back-end) that loads a deterministic **60 Hz** tick over **10 km²** scenes with **1k** moving assets and **200** static structures, all within sub-**50 ms** end-to-end latency.
- Replaced Cannon-es with a custom **OBB collider + 10 m spatial-hash grid**, enabling **sub 1 ms** CPU/frame collision checks for 1k dynamic objects while keeping physics deterministic across clients.
- Introduced a DRACO-compressed GLTF streaming pipeline and hierarchical **LOD** map that cut cold-start scene load time from **15 s** → **2.5 s** and doubled average frame rate from **30** → **60 FPS**.
- Shipped **15+ asyncio WebSocket endpoints** behind a hand-rolled HTTPS/WSS hub, such as drone telemetry, RF-emitter tracks, and multiplayer commands with p99 round-trip of **45 ms**.
- Built replayable history export (JSON + UI), volumetric weather, time-of-day lighting, and a MapLibre “globe” renderer that streams **2 m DEM MBTiles** on-demand; added a **live RF-noise heat-map computed with a calibrated thermal-noise equation** and path-loss model across the entire 510m km² globe
- Collaborated in a lean 2-dev pod with stand-ups and **150+ PR reviews** following an agile flow on Gitlab Projects.

PROJECTS

The Yappin' Spirit | Unity (C#), Python (OpenCV, DeepFace, Flask)

- Engineered a dual-process emotion-telemetry bridge: a **Python** side-car captures webcam frames, runs **Haar-cascade** face localisation + **DeepFace** six-class inference, and exposes two REST/JSON+**base64** endpoints at a sustained **10 Hz** with end-to-end latency <30 ms; **Stats.js** overlay and structured logs confirm a stable **8–10 Hz** loop on CPU-only and zero packet loss under a **100 req/s** soak test.
- Authored a reusable **C#** Unity client that polls the service in its own coroutine, applies a 5-sample EMA to suppress jitter, and raises scriptable events that drive dialogue and shader FX.
- Implemented a GPU audio-reactive water-ripple in **URP ShaderGraph**: a real-time **256-sample FFT** drives a nine-parameter wave equation while sustaining a deterministic **60 FPS** on Intel UHD 620.

Custom Full Stack Web-app with Database and User Authentication | Python (Flask), PocketBase, Docker

- Single command launches a **4-worker Gunicorn API** plus **Supabase Postgres + Auth** stack in a **119 MB** image, sustaining **100 req/s**; secrets flow from **.env** for code-free dev → prod swaps.
- Built a **custom login / session system** that re-signs PocketBase JWTs into **HttpOnly** cookies; **20+** role-aware CRUD / download endpoints apply ACLs with JSON validation and custom 404/500 handlers.
- On-the-fly QR generator (**qrcode v1**, **ERROR-CORRECT-H**, Pillow LANCZOS overlay) delivers scan-safe **PNG / Base64** in <**120 ms** p95 and persists blobs for CDN-agnostic retrieval.